From: "Ryckman, Fred F." <fryckman@nd.gov>
To: Jessica <Johnson;Rockeman>
Karl <H.;Harlon>
"William D III" <NWO;Way>
Steven;Luttschwager
Kent <A.;Johnson>
Sean <M.;Wax>
Peter <N.;Slominski>
Aaron <P.;Gangl>
"Scott; Kreft"
Bruce <L.>
CC:
Date: 1/16/2015 9:23:06 AM
Subject: RE: Blacktail Creek spill information-flows

Jessica,

Provided that the USGS flow data is accurate, the gauge height could be used to try to determine flow. USGS should be able to determine whether the gauge reading is accurate, and then also use their existing stage discharge relationship table to determine how much flow the measured increase (approximately 0.06 foot) in the gauge reading equals in terms of flow? But I doubt that the gauge height reading is sensitive or accurate enough to do this, especially under extremely cold conditions? And I also noted that the USGS stage discharge table for this site does contain a disclaimer much to this effect.

But since it was extremely cold, your conclusion that the spike in flow had to be due to the spill is undoubtedly correct. Thus the increased flow will indicate when the spill occurred, which appears to have been on the 2nd or 3rd, depending upon the flow time from the site of the spill entering Blacktail Creek downstream to this gauging station. I'd estimate that the spill was about 20 flow miles upstream from this gauging site; perhaps USGS could also provide an estimate of this flow time to better determine the time and date when the brine flow entered Blacktail Creek?

But I suspect that the best estimate of the volume of spill might still be provided by the company that operates the salt water collection line? They could use their records of the volume of saltwater collected by this line, probably most easily by the volume of salt water that required hauling to a disposal site on a daily basis, to determine the reduction in volume collected – and thus lost to the spill. But of course companies are very reluctant to provide true estimates of spills, but rather almost always provide a very conservative number which they know cannot be easily disputed?

Fred

From: Jessica Johnson [mailto:jessica_n_johnson@fws.gov]
Sent: Friday, January 16, 2015 8:51 AM
To: Rockeman, Karl H.; Harlon, William D III NWO; Way, Steven; Luttschwager, Kent A.; Ryckman, Fred F.; Johnson, Sean M.; Wax, Peter N.
Subject: RE: Blacktail Creek spill information-flows

Hello,
I pulled up the USGS water flow data from Cow Creek which is just below Blacktail Creek, you can see a spike in the gauge height right around the time of the spill. I can't think of any other reason for this spike except for the spill. Perhaps we could use the Manning Formula or something similar to get a rough estimate of the volume of the spill.
http://waterdata.usgs.gov/nwis/uv?cb_00060=on&cb_00065=on&format=gif_default&site_no=06331000&period=&begin_date=2014-12-01&end_date=2015-01-16
-Jessica

Jessica Johnson
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From: Rockeman, Karl H. [mailto:krockema@nd.gov]
Sent: Tuesday, January 13, 2015 12:45 PM
To: Jessica_N_Johnson@fws.gov; Harlon, William D III NWO; Way, Steven; Luttschwager, Kent A.; Ryckman, Fred F.; Johnson, Sean M.
Subject: Blacktail Creek spill information

Attached please find a listing of sampling data, including NDIC results, along with maps showing locations. I have also attached the spill report with most recent updates.

Please note that most of the data included is from field readings, and not laboratory samples, so should be considered provisional.

If you have any questions, please let me know.

Karl Rockeman, P.E.
Director
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North Dakota Department of Health
(701)328-5210